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THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Patent Appeals and Interferences

In re the Application

Inventor : **S. Krishnamachari et al.**
Application No. : **09/643,483**
Filed : **March 22, 2000**
For : **MULTIMEDIA WATERMARKING SYSTEM AND METHOD**

APPEAL BRIEF

On Appeal from Group Art Unit 2135

Date: December 20, 2004

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I. REAL PARTY IN INTEREST

The real party in interest is the assignee of the present application, Koninklijke Philips Electronics N.W., and not the party named in the above caption.

II. RELATED APPEALS AND INTERFERENCES

With regard to identifying by number and filing date all other appeals or interferences known to Appellant which will directly effect or be directly affected by or have a bearing on the Board's decision in this appeal, Appellant is not aware of any such appeals or interferences.

III. STATUS OF CLAIMS

Claims 1-14 have been presented for examination. All of these claims are pending, stand finally rejected, and form the subject matter of the present appeal.

IV. STATUS OF AMENDMENTS

No Amendment after the Final Office Action has been made.

V. SUMMARY OF THE INVENTION

A watermark is inserted into a multimedia object, to be transmitted to a receiver, in a manner effective to prevent tampering with the object in transit (page 5, lines 15-16; page 6, lines 11-12). The watermark often will reflect content of the data into which it is inserted (page 2, lines 6-8). One problem is that if two frames show no change in the

object, and only one of the frames has the watermark, the watermark can be identified by the tamperer who subtracts the two frames (page 2, lines 15-18).

According to the present invention, the watermark is split into two parts, and the first part is inserted into a first media component of the multimedia object, the second part being inserted into the second media component of the multimedia object (page 5, lines 15-16; page 6, lines 11-12). These two parts are joined at the receiver to constitute the full watermark (page 10, lines 20-21). Even though the video, e.g., first media component, is largely invariant over the course of several frames, the audio, e.g., second media component, will typically vary (page 6, lines 12-15). Therefore, if the split of the watermark introduces variability for both parts, the watermark parts will be harder to decipher in transit (page 6, lines 15-17).

At the receiver, the first and second watermark parts are extracted and combined, and this combined watermark is compared with a provided watermark to assess the integrity of the transmission (page 10, line 18 – page 11, line 2).

VI. ISSUES

A. Whether claims 1-13 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 5,915,027 to Cox et al. (“Cox”) in view of “Combined Video and Audio Watermarking: Embedded Content Information in Multimedia Data” to Dittmann et al. (“Dittmann”).

B. Whether claim 14 is patentable under 35 U.S.C. 103(a) over Cox in view of Dittmann and U.S. Patent No. 6,351,538 to U.S. Patent No. 6,351,538 to Uz.

VII. GROUPING OF CLAIMS

Claims 1-13 stand or fall together. Claim 14, whose ground of rejection differs, stands or falls alone.

VIII. ARGUMENT

The two inserting steps of claim 1 insert into “the first media component” and into “the second media component,” respectively.

These expressions refer to the preamble, “A method of protecting a multimedia object having a first media component and a second media component . . .”

One of ordinary skill in the art knows that a multimedia object is composed of different media (present specification, page 1, lines 8-9: “data in multimedia objects, such as audio, video and still image content”).

One of ordinary skill in the art likewise knows what is meant by a “media component” of a “multimedia object.”

The Cox reference discloses splitting a watermark into components, dividing an image into data blocks, and inserting watermark components into respective ones of the data blocks.

Cox states that the terms “image” and “image data” are understood, in the context of the Cox patent application, to include the terms “video, image and multimedia data” “where applicable.”

However, even if the above-described Cox watermark splitting is applied to “multimedia data,” so that even if an image Cox divides is part of multimedia data, i.e., a media component of multimedia data, Cox suffers at least two shortcomings.

Firstly, there is no suggestion in Cox of the splitting steps of claim 1. In particular, Cox fails to disclose or suggest “A method of protecting a multimedia object having a first media component and a second media component , comprising the steps of. . . inserting the first part of the watermark into the first media component; inserting the second part of the watermark into the second media component.”

Secondly, Cox fails to disclose or suggest a “multimedia object,” much less a multimedia object “having a first media component and second media component, . . . inserting the first part of the watermark into the first media component; inserting the second part of the watermark into the second media component.”

The final Office Action (hereinafter “Office Action”) cites the Cox abstract for disclosure of a “multimedia object,” but it is unclear how an object is fairly construed from the Cox abstract. Moreover, it is unclear how, conveniently, a “first part of the watermark” is inserted into “the first media component” of this hypothetical “object,” and “the second part of the watermark” is inserted into “the second media component” of this hypothetical “object.”

Nor can the applicant find anything in the Dittmann reference to make up for this second shortcoming of Cox.

With regard to the first shortcoming of Cox, the Examiner acknowledges this first shortcoming as a purported reason for introducing the Dittmann reference (Office Action, page 2, last full sentence), but Dittmann fails to disclose or suggest “splitting the

watermark into a first part and a second part” which language explicitly appears in claim 1 of the present invention.

Instead, Dittmann suggests two alternative methods. First, time codes that increase temporally can be inserted into audio, while time codes that decrease temporally can be inserted into video, such that the time codes of the two synchronized media add to cancel each other (Dittmann, page 455, second paragraph, last sentence). In a second method, watermarks are used to embed information in each media about the content of the other media (Dittmann, page 455, second paragraph, last sentence).

Notably, no disclosure or suggestion exists, in either alternative, or anywhere in Dittmann, of splitting a watermark among media.

The “insight” of splitting a watermark among different media, much less different media components of a multimedia object, is not found in either reference or in their combination, but, instead, through impermissible hindsight of an Examiner who has seen the disclosure of the present patent application. In addition, even impermissible hindsight does not seem to have evinced a multimedia “object” according to the present claim 1.

For at least all of the above reasons, the proposed combination of references fails to render obvious the present invention as recited in claim 1.

Claim 5 likewise recites the same preamble language, referenced by the same language with regard to inserting the respective part of the watermark into the respective media component. Accordingly, claim 5 distinguishes patentably over the applied references.

Claim 11, which relates to authenticating the received watermark, recites the same preamble language. This language is referenced by the analogous extracting steps. Accordingly, claim 11 distinguishes patentably over the applied references.

Claim 14 depends from claim 11, and the Uz reference cannot compensate for the deficiencies in Cox and Dittmann.

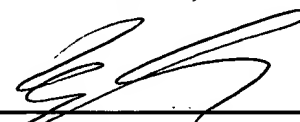
As to the other claims, each depends from a respective base claim and is deemed to be patentable over the applied prior art for at least the same reasons set forth above with regard to the base claim.

IX. CONCLUSION

In view of the above analysis, it is respectfully submitted that the referenced teachings, whether taken individually or in combination, fail to anticipate or render obvious the subject matter of any of the present claims. Therefore, reversal of all outstanding grounds of rejection is respectfully solicited.

Respectfully submitted,

Russell Gross
Registration No. 40,007

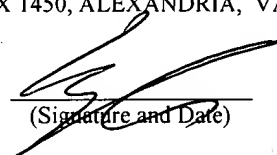

By: Steve Cha
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Date: December 20, 2004

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Steve Cha, Reg. No. 44,069
(Name of Registered Rep.)


(Signature and Date)

X. APPENDIX: THE CLAIMS ON APPEAL

1. A method of protecting a multimedia object having a first media component and a second media component, comprising the steps of:

providing a watermark;

splitting the watermark into a first part and a second part;

inserting the first part of the watermark into the first media component;

inserting the second part of the watermark into the second media component; and

outputting a watermarked multimedia object.

2. The method of claim 1, comprising the further steps of:

receiving the watermarked multimedia object;

extracting from the first media component of the watermarked multimedia object a first extracted watermark part;

extracting from the second media component of the watermarked multimedia object a second extracted watermark part;

combining the first extracted watermark part with the second extracted watermark part; and

comparing the combined first and second extracted watermark parts with the provided watermark to verify an ownership.

3. The method of claim 1, wherein the watermark is a signature watermark and is provided by:

obtaining a signature of the multimedia object; and

generating the signature watermark as a function of the signature.

4. The method of claim 3, comprising the further steps of:

receiving the watermarked multimedia object;

extracting from the first media component of the watermarked multimedia object
a first extracted watermark part;

extracting from the second media component of the watermarked multimedia
object a second extracted watermark part;

generating a combination watermark by combining the first extracted watermark
part with the second extracted watermark part;

generating a signature watermark that is a function of a signature extracted from
the watermarked multimedia object; and

comparing the combination watermark with the signature watermark to
authenticate the multimedia object.

5. A system for protecting a multimedia object having a first media component and a
second media component, comprising:

a mechanism for splitting a watermark into a first and a second part; and

a mechanism for inserting the first part into the first media component, and for
inserting the second part into the second media component.

6. The system of claim 5, further comprising a mechanism for outputting a
watermarked multimedia object, wherein the watermarked multimedia object includes the

first media component having the first part of the watermark, and the second media component having the second part of the watermark.

7. The system of claim 5, wherein the first media component is an audio component, and the second media component is a video component.

8. The system of claim 6, further comprising:
a mechanism for obtaining a signature from the multimedia object; and
a mechanism for generating the watermark as a function of the signature.

9. The system of claim 6, further comprising:
a mechanism for extracting a first extracted watermark part from the first media component in the watermarked multimedia object, and for extracting a second extracted watermark part from the second media component in the watermarked multimedia object;
a mechanism for combining the first extracted watermark part with the second extracted watermark part; and
a mechanism for comparing the combined first and second extracted watermark parts with the watermark.

10. The system of claim 8, further comprising:
a mechanism for extracting a first extracted watermark part from the first media component in the watermarked multimedia object, and for extracting a second extracted watermark part from the second media component in the watermarked multimedia object;

a mechanism for generating an extracted watermark by combining the first extracted watermark part with the second extracted watermark part;

a mechanism for generating a signature watermark that is a function of a signature of the watermarked multimedia object; and

a mechanism for comparing the extracted watermark with the signature watermark.

11. A system for authenticating a watermarked multimedia object having a first media component and a second media component, comprising:

a mechanism for extracting a first watermark part from the first media component, and for extracting a second watermark part from the second media component;

a mechanism for combining the first extracted watermark part with the second extracted watermark part; and

a mechanism for comparing the combined first and second watermark parts with a provided watermark.

12. The system of claim 11, wherein the provided watermark is generated as a function of a signature of the watermarked multimedia object.

13. The system of claim 11, wherein the first media component is a video component and the second media component is an audio component.

14. The system of claim 13, wherein the watermarked multimedia object has a third media object, and wherein the third media object is a closed caption component.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT : S. Krishnamachari et al.
SERIAL NO. : 09/643,483 EXAMINER : Beemnet W. Dada
FILED : March 22, 2000 ART UNIT : 2135
FOR : MULTIMEDIA WATERMARKING SYSTEM AND METHOD

APPEAL BRIEF TRANSMITTAL LETTER

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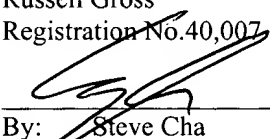
Dear Sir:

Appellants respectfully submit three copies of a Brief For Appellants that includes an Appendix with the pending claims. The Appeal Brief is now due on December 20, 2004.

Appellants enclose a check in the amount of \$500.00 covering the requisite Government Fee.

Should the Examiner deem that there are any issues which may be best resolved by telephone communication, kindly telephone Applicants undersigned representative at the number listed below.

Respectfully submitted,
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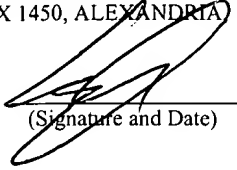
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